

CLAIMS

1. A retractable column comprising:

at least two section chains arranged in an adjacent manner, each section chain having a plurality of sections pivotally connected to each other; and

an at least one chain connection member extending in an outward direction from each section wherein the chain connection members further comprise a surface which slopes toward a point and whereby the chain connection members couple to one another to link each section chain to the adjacent section chain in such a manner as to form a rigid column as the section chains are raised in an operably position.

2. The apparatus of claim 1 wherein the chain connection member further comprises an elongated shaft and a distal hook portion wherein the surface of the chain connection member that converges towards a point is represented by the distal hook portion.

3. The apparatus of claim 2 wherein each section comprises a first chain connection member extending in a substantially outward direction from the section and a second chain connection member extending in a substantially outward direction from the section and wherein a plane running through the hook of the second chain connection member is set at an angle to the elongated shaft.

4. The apparatus of claim 3 wherein the elongated shaft of the chain connection member has a shoulder portion wherein the shoulder portion prevents twisting of the shaft in relation to its connection to the section.

5. The apparatus of claim 1 further comprising:

a guide tower operably positioned relative to the two section chains wherein the guide tower engages the sections and helps to guide the first and second hooks into coupled engagement; and

an at least one guide roller operably connected to the guide tower and operably interacting with the section chains whereby the guide rollers engage the sections and helps to guide the first and second hooks into coupled engagement.

6. The apparatus of claim 2 further comprising an at least one shim, the shims operably affixed to the guide tower whereby the shims engage the sections and helps to guide the first and second hooks into coupled engagement.

7. The apparatus of claim 5 further comprising an at least one interior roller, the interior rollers operably affixed to the guide tower whereby the interior rollers engage the sections and helps to guide the first and second hooks into coupled engagement.

8. The apparatus of claim 7 further comprising a gear rack fixedly connected to each section of the section chain, the gear rack affixed by an extruded T-slot to which fasteners are attached through the gear rack and into the section whereby the gear rack is positioned to engage a drive mechanism and an at least one guide roller.

9. The apparatus of claim 8 wherein an at least one key is inserted into an at least one slot thereby affixing the gear rack to the section of the section chain.

10. The apparatus of claim 9 wherein the drive mechanism is operably attached to guide tower and operably interacts with the section chains whereby actuation of the drive mechanism raises the section chains into position so that the first and second hooks engage to form the column.

11. The apparatus of claim 1 wherein the guide tower further comprises an at least one tongue, the tongues movably connected to an at least one post by an at least one reaction ring whereby the guide tower can move in an X, Y horizontal plane.

12. A retractable column that can be stored on a take up mechanism, the column further comprising:

an at least one section chain, each section chain comprising a plurality of sections pivotally connected in a line, the section chains being attached in such a manner that they can be rolled up on the take mechanism in a compact fashion and wherein each section is layered upon previous sections;

a first connection member operably attached to each section wherein the first connection member extends in a horizontal manner from the section; and

a second connection member operably attached to each section wherein the second connection member extends in an off-set manner from the section, wherein the connection members are curved and wherein when the section chains are extended from the take up mechanism and into a corresponding position the section chains operably couple by attachment of the sequential attachment of first connection members to second connection members.

13. The apparatus of claim 12 further comprising a kicker, the kicker operably attached to the crossbar of each section of the section chain whereby when the section is taken up by the take up mechanism, the kicker shunts the section into a properly seated position relative to the section underneath it on the take up mechanism.

14. The apparatus of claim 13 further comprising a drive mechanism operably attached to the section chains whereby actuation of the drive mechanism raises the section chains into position

whereby the interlocking engagement of the first and second connection members to form the column.

15. The apparatus of claim 14 further comprising:

a guide tower operably positioned to the two section chains wherein the guide tower engage the sections and helps to guide the first and second connection members into coupled engagement; and

an at least one guide roller operably connected to the guide tower and operably interacting with the section chains whereby the guide rollers engage the sections and helps to guide the first and second connection members into coupled engagement.

16. The apparatus of claim 15 further comprising an at least one shim, the shims operably attached to the guide tower whereby the shims engage the sections and helps to guide the first and second connection members into coupled engagement.

17. The apparatus of claim 16 further comprising an at least one interior roller, the interior rollers operably positioned on the guide tower whereby the interior rollers engage the sections and helps to guide the first and second connection members into coupled engagement.

18. The apparatus of claim 15 further comprising:

a gear rack fixedly connected to each section of the section chain, the gear rack affixed an extruded T-slot to which fasteners are attached through the gear rack and into the section whereby the gear rack is positioned to engage a drive mechanism and an at least one guide roller; and

an at least one key inserted into the gear rack and the section of the section chain whereby the gear rack is affixedly connected to the section of the section chain.

19. The apparatus of claim 15 further comprising a drive mechanism operably attached to the section chains whereby actuation of the drive mechanism raises the section chains into position whereby the interlocking engagement of the first and second connection members to form the column.

20. The apparatus of claim 19 wherein the guide tower further comprises an at least one tongue, the tongues movably connected to an at least one post by an at least one reaction ring whereby the guide tower can move in an X, Y horizontal plane.

21. An apparatus for raising a retractable column, the apparatus comprising:

an at least one section chain, the section chains operably positioned so that they may be raised and lowered concurrently, the raising and lowering of each section chain acting to couple each section chain to the adjacent section chains to form a column;

a guide tower, the guide tower situated so that as the section chains are raised, the section chains move up the length of the guide tower and are guided into a position that facilitates the coupling of each section chain to the adjacent section chains to form a column;

an at least one guide roller, the guide roller operably attached to the guide tower so that the guide roller operatively interacts with a portion of the sections of the section chains to guide the section chains into position where each section chain may be physically coupled to the section chains adjacent to it;

an at least one shim each shim operably attached to the guide tower, the shims providing an adjustable platform for guiding the sections of the section chains into a position whereby the coupling of the adjacent section chains will be accomplished; and,

and further comprising a motor operably affixed to the guide tower, the motor effectuating the raising and lowering of each section chain.

22. A retractable column for supporting an overhead structure, the column further comprising:

an at least one section chain, each section chain comprising a plurality of sections pivotally connected in a line, the section chains being attached in such a manner that they can be rolled up on a take mechanism in a compact fashion with each section layered upon prior sections

a first hook attached to each section of the section chains, the first hook extending in a horizontal manner from each section; and,

a second hook attached to the opposite side of each section from the first hook and in an off-set manner whereby each on a section is adjacent to an offset hook on an adjacent section, whereby when the section chains are raised in a concurrent manner, the first hooks from adjacent sections form an interlocking engagement with the second hooks from adjacent sections, the interlocking engagement binding each section chain to the adjacent section chains.

23. The retractable column of claim 22 further comprising:

a guide tower operably positioned relative to each section chain whereby the guide tower helps to guide the first and second hooks into operably engagement;

an at least one roller, the rollers operably attached to a guide tower, the rollers rotationally engaging the sections of the section chain as the section chain is raised in a manner to form the tower, the rollers guiding the section chains into a position whereby the sections chains may be coupled to the adjacent section chains to form the retractable tower;

a motor in operably connection with each section chain and operably affixed to the guide tower, the motor effectuating the raising and lowering of each section chain; and

an at least one reaction ring operably attached to the guide tower and connected to an at least one post whereby the guide tower can move in an X, Y horizontal direction.

24. A method for erecting a retractable tower, the method comprising:

providing adjacent section chains, each chain further comprising a series of pivotally connected sections;

coupling the adjacent sections of adjacent section chains by linking corresponding mating hooks from each section chain; and,

lifting the coupled section chains in a vertical manner as the adjacent section chains are coupled thereby forming each section chain into the face of a tower.